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Unravelling the Relationship Between Social Class and Multiple Aspects of Success in Higher Education: A Cross-Institutional Study

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Abstract

Although previous research has found social class differences in students' academic performance at university, success in higher education is far more multi-faceted. This study surveyed 2,665 undergraduate students from six Australian universities to investigate mediators of class differences in success, where success was operationalised using diverse and comprehensive measures (e.g., academic self-efficacy, cognitive engagement). Importantly, class was operationalised as a continuous variable rather than arbitrary quartiles. Mediation analyses showed consistent relationships between class and sense of success. Economic capital was identified as the main mediator, followed by social connections, cultural expectations, and aspirations. Some criteria—particularly greater interdependent motivation to be a role model for their community and assist their families after university—were more important in success evaluations for students from backgrounds with lower measures of socioeconomic class. Interdependent motivations suppressed some of the negative effects of lower class, providing evidence of alternative capitals or personal motivational resources. We conclude that conceptions of educational success that elide non-academic forms of success and minimise student's motivations, especially community-based motivations, offer a limited and limiting understanding of the student experience.

Keywords: Equity in higher education; social class; socioeconomic status; academic success; university students; inequality; mediation analysis.

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Introduction

Social class is a latent factor that represents an inextricable intersection between education, occupation, income, and sociocultural background and/or identity. It overlaps with, but is not identical to, socioeconomic status (SES), which primarily refers to socioeconomic position, whereas class encompasses social and cultural identity in relation to capital, habitus and field (Bourdieu, 1986). As equity policy aims to widen participation in higher education for people categorised as from lower SES and social class backgrounds (LSESCB), disparities in educational outcomes mediated by class are a growing issue for universities and governments, typically framed as differences in "success" (e.g., DESE, 2022; Robbins et al., 2004).

Typically, success is identified as the percentage of courses passed or completed in a certain period, the attainment of specific benchmarks or skills, or the number of students who complete their degree in a (perceived) efficient, linear fashion (Burke, 2012; DESE, 2022). However, researchers have been critical of this limited conceptualisation of university success in recent years, arguing that focusing exclusively on these markers exacerbates existing exclusion and inequalities (Allen, 2020; Burke, 2012; O'Shea & Delahunty, 2018). Classed subjectivities seen as outside of the middle-class norm are mischaracterised through deficit lenses that individualise difficulties, ignoring how class is reproduced through socioeconomic and cultural inequities (Burke, 2012). Dominant definitions therefore fail to account for what matters from different student perspectives. To avoid this, it is critical to consider students' own experiences and assessments of success at university, including how they understand and value the benefits of higher education (HE) participation (Allen, 2020; Burke et al., 2016). Internationally, students report finding success in many diverse areas, including personal growth attained while studying (Allen, 2020), connections formed with students and staff (Burke et al., 2016), and the sense of identity and belonging that comes from being a student (Allen, 2020; Burke et al., 2016; Naylor, 2023; O'Shea & Delahunty, 2018).

We sought to explore the influences of class across this wider spectrum of success, including personal growth, belonging, identity, interest and peer engagement, participation, and self-efficacy, measures of feelings of success and expectations for future success, and several measures that we consider to be antithetical to success, including a sense of imposterism and mental health issues. We posed three hypotheses: (1) social class will be positively related to perceived success; (2) class will be positively related to the four dimensions of inequality (social connection, economic resources, cultural expectations, and aspirations); (3) the dimensions of inequality will mediate the relationship between class and perceived success.

Our study makes several theoretical, methodological and empirical contributions. Although Australian education policy frames inequities as SES differences (DESE, 2022), we incorporate a broader social class analysis, with a particular focus on the conceptual themes of social capital, family cultural expectations and aspirations, to better capture how diverse differences in conceptions of success at university are classed and contested over (Burke et al., 2023; Rubin et al., 2019). To support research transparency, this study was pre-registered at Open Science Foundation (http://bit.ly/socialclasssuccess). Our measure of social inequality was continuous and multidimensional rather than discrete, and our student population drawn from a diverse range of institutions. This broad lens allowed us to perform detailed mediation and suppression analyses. Importantly, we are able to show that economic capital is the main mediator for success on multiple measures (ahead of social connections and cultural expectations) (Naylor & Mifsud, 2020), and that students from LSESCB tend to have stronger interdependent motivations, which act protectively. That is, LSESCB students' ties to their communities and desire to be role models at least partially protects them from the effects of class (Hernandez et al., 2020; Yosso, 2005) and is an important measure of success in itself for these students.

Method

Participants, Power and Sensitivity Analysis

Participants were recruited from six publicly funded Australian universities that ranged in size from ~18,000 enrolments to ~54,000 enrolments (M = 39,000). They ranged in national rankings from 4th to 33rd, out of the 35 Australian universities listed by the Times Higher Education's (2020) World University Rankings. The survey received 4,968 responses from participants who were undergraduate students enrolled at one of six Australian universities in the previous semester. Of these, 2,665 remained after ineligible responses, duplicates, and those who did not provide informed consent to participate were removed. One participant was excluded because they completed the survey in less time than our preregistered threshold of 5 minutes. Participants had a mean age of 25.45 years (SD = 9.10), and their median year of commencement at university was 2018. See Table A1 (Appendix) for full demographic details.

Given our sample size (N = 2,665), we reduced our alpha level (significance threshold) from .05 to .005 to provide a stringent Type I error rate. A sensitivity analysis found that a two-tailed correlation test with a power of .85 and an alpha level of .005 would be able to detect an effect size of r = .074 using a sample size of 2,665. Hence, the study had sufficient power.

Procedure

This study received ethical clearance from the lead institution's human research ethics committee. Data collection occurred between January 28, 2020 and August 1, 2020, thus overlapping the COVID-19 pandemic. However, most questions asked students to reflect on their experiences during the preceding semester, hence, reporting students' pre-COVID-19 experiences. Students were recruited via visits to undergraduate classes in lecture theatres and tutorials (where possible), notices on online course websites, and mass emails. Participants had the opportunity to enter a prize lottery to win 1 of 150 AU$100 electronic gift vouchers.

Participants completed the survey online in their own time. Measures of success and dimensions of inequality were presented in a randomised order for each participant, while class and demographic items were presented at the end of the survey to reduce priming bias. The survey required a total of 131 responses, and median completion time was 17.85 minutes. The online survey software did not allow them to continue without completing all items, hence there was no missing data.

Open Science Resources

The following information is included at http://bit.ly/socialclasssuccess: the research survey, raw and refined research data, data aggregation code, and a preregistered research protocol that includes a list of the research hypotheses and our standard analytical approaches. For brevity and clarity, we have not reported all our preregistered analyses in this paper. We confirm that we have disclosed all data exclusions, and we did not conduct any interim data analyses during data collection. We have reported the results of robustness analyses (e.g., analyses with and without outliers and covariates), including all significant results that contradict our claims.

Measures

Predictor Variable: Class

Class was measured multidimensionally. Items assessed the highest level of education of each participant's mother and father; prestige and status of the mother's and father's occupations; subjective perceptions of wealth during childhood; perceived social class of mother, father, and self; and an adapted version of the single item MacArthur Scale of Subjective Social Status (Adler & Stewart, 2007; Evans et al., 2022; Griskevicius et al., 2011; Ostrove & Long, 2007; Rubin & Kelly, 2015). A principal axis exploratory factor analysis was used to test the factor structure of the 11 items after conversion to standardised scores. A scree plot suggested either one or two factors. The first factor had an eigenvalue of 4.82 and accounted for 43.81% of the variance, and the second had an eigenvalue of 1.32 and accounted for 12.01% of the variance. Factors were extracted using a promax rotation ($\kappa = 3$). A two-factor solution resulted in the two items assessing parental education loading positively on both factors ($\geq .45$). A one-factor solution resulted in all 11 items loading $\geq .41$. Our preregistered cut-point for item loadings was .50 but given that .40 is often used as a conventional threshold, we included the two parental education items in a global, one-factor, measure of class. This one-factor approach has been used in prior research (Evans et al., 2022; Rubin & Kelly, 2015). The resulting measure had a good Cronbach's alpha (.87) and a good mean interitem correlation ($r = .37$). In addition, scores on this global measure were normally distributed (skewness = -.38, kurtosis = -.28).

We did not impose arbitrary cut-offs on our measure to categorise students as LSESCB. We used the class index as a continuous scale, with higher scores indicating higher social class (Rubin et al., 2019). This approach is appropriate when considering associations between variables rather than differences between groups.

Mediator Variables: Social Connections, Economic Resources, Cultural Expectations, and Aspirations

Full details of example items, response scales, and internal reliability values for mediator and outcome variables can be found in Table A2 (Appendix). More briefly, social connections were measured using four items from the Friendship scale of the Student-Institution Fit survey (Bowman & Denson, 2014). Economic resources were assessed using nine items based on Bickel et al., (2000). After being standardised, the financial difficulty, homelessness, money for study, money for socialising, financial assistance, and financial stress variables had a good Cronbach's alpha ($\alpha = .75$) and a good mean interitem correlation ($r = .34$), and so they were combined to form a more reliable index of economic resources. The paid work variable did not fit well into this index (reducing alpha to .70), and so it was left separate.

Cultural expectations were assessed using nine variables that measured students' expectations about university (two items), family expectations about attending university (two items), perceived discrimination at university (1 item), family support for the decision to attend university (1 item) and for university studies (1 item), and time available for studying (1 item) and socialising (1 item). Aspirations were assessed using four items that were adapted from the Independent/Interdependent Motivations for Going to University scale (Stephens et al., 2012). Two items measured independent motivations, and two items measured interdependent motivations. Although the association between the two interdependent items was lower than

expected (ρ = .55), we decided to combine them as part of a single, more valid measure, rather than to treat them as separate items (Clifton, 2020), especially given that they were derived from a previously validated measure (Stephens et al., 2012).

Outcome Variables: Success

We assessed perceived success in terms of grades, special provisions, belonging and identity, engagement and participation, feelings of success, interpretations of success, expectations of success, and attributions for success. We measured grades as the number of each type of grade that students had received in the last semester (e.g., higher distinction/A, distinction/B, etc.), students' average grade at university, their self-ranking relative to peers in terms of their grades, their characterisation of their grades during university, and their most frequent grade. Only the number of top grades (e.g., higher distinctions/A) showed strong associations with the other measures of grades (rs ≥ .51; other grade types mean r = -.24). Hence, we only included the number of higher distinctions in our composite measure of grades. After being standardised, the number of higher distinction grades, average grade, self-ranking relative to peers in terms of grade, characterisation of grades during university, and most frequent grade at university combined to form a reliable measure of grades (α = .91).

Perceived success was also assessed in terms of students' engagement and participation. Students completed two subscales from the Higher Education Student Engagement Scale (Zhoc et al., 2019): the Cognitive Engagement subscale and the Peer Engagement subscale. Participants also completed three items adapted from the Schoolwork Engagement Inventory (Salmela-Aro & Upadaya, 2012). Finally, participants completed single items that measured students' self-reported percentage of the time attending classes or listening to their online recordings, the number of leaves of absence taken since starting university, the frequency with which students submitted late assessments, the frequency of students' applications for special provisions (e.g., adverse circumstances, special considerations) independent from any disability plan and whether students felt that it was appropriate to ask for special provisions.

We also assessed students' feelings, interpretations, expectations and attributions of success. Belonging, identity and academic self-efficacy were measured using two items from validated scales (Bowman & Felix, 2017; Hurtado & Carter, 1997; Midgley et al., 2000). Sense of being an imposter at university was measured using two items from Leary et al.'s (2000) Imposterism Scale. Mental health was measured using the Mental Health Inventory-5 (Berwick et al., 1991). Single items were used to measure feelings of success, personal growth, seeing the self as a role model, satisfaction with university, perceiving university admission as success, grades as success, and the association between feedback and failure. Four items measured expectations of completing university, and one item measured the expected time to complete university. Single items measured deservedness of success and internal attributions for success.

Analytical Approach

In line with our preregistration, we took the conservative approach (Yzerbyt et al., 2018) of restricting mediation tests to cases where (a) the predictor variable (class) was significantly related to the outcome variable (success) and (b) the predictor was significantly related to the mediator variable (social connections, economic resources, cultural expectations, or aspirations). During mediation analyses, we also confirmed that (c) the mediator variable was significantly related to the outcome variable. The mediator variables were entered in parallel as part of the same model to test the indirect effect of each mediator variable while controlling for the indirect effects of the other mediator variables using 5,000 bootstrapping iterations and bias-corrected bootstrapped 99.5% confidence intervals.

Results

Predictor and Outcome Variables: Class and Success

Consistent but typically weak relationships were observed between class and success indicators (Table 1). In brief, the strongest positive associations were seen in the relationships between class and peer engagement (r = .14), mental health (r = .12), and sense of belonging to the university community (r = .10), and the strongest negative associations were between class and seeing admission to university as a major form of success (r = -.18), expected length of time to finish the degree (r = -.15) and frequency of handing in assignments late (r = -.10; all ps < .001). Overall, students reporting lower measures of social class were statistically significantly more likely to report poorer grades, more special provisions applications, less peer engagement, more late assessments, poorer sense of belonging at university, poorer mental health, less satisfaction with university, greater sense that feedback received made them feel like a failure, less expectation that they would complete university, and greater belief that it would take them longer to complete university. However, they were also increasingly likely to report greater class attendance and greater association of university admission with success. Note that class had no significant association with students' feelings of success.

Table 1

Associations Between Class and Success Variables

Type of measure	Outcome variable	r	p
Grades	Grades	.07	.001
Special provisions	Frequency of special provision applications	-.06	.002
	Acceptability of special provisions	-.01	.523
Belonging and identity	Sense of belonging	.10	.001
	Student identity	.05	.016
Engagement and participation	Cognitive engagement	-.04	.026
	Peer engagement	.14	.001
	Schoolwork engagement	-.04	.073
	Percentage of time attending classes	-.08	.001
	Leaves of absence	.02	.294
	Late assessments	-.10	.001
Feelings of success	Academic self-efficacy	.05	.015
	University imposterism	-.08	.001
	Mental health	.12	.001
	Feelings of success	.03	.075
	Personal growth	.03	.089
	Seeing the self as a role model	-.05	.006
	Satisfaction with university	.06	.002
Interpretations of success	University admission as success	-.18	.001
	Grades as success	.00	.990
	Feedback received gives feeling of failure	-.07	.001
Expectations of success	Expectations of completing university	.08	.001
	Expected time to complete university	-.15	.001
Attributions of success	Deservedness of success	-.01	.763
	Internal attributions for success	-.03	.106

Predictor and Mediator Variables: Class and the Four Dimensions of Inequality

Class showed significant associations with all aspects of social connections, economic resources, cultural expectations, and aspirations apart from paid work ($r = .05$, $p = .016$), witnessing discrimination at university ($r = -.02$, $p = .293$), and independent motivations ($r = .03$, $p = .159$). The significant associations between class and the dimensions of inequality were all positive (rs ranged from .09 to .40, ps < .001) apart from that between class and interdependent motivations, which was negative ($r = -.15$, $p < .001$).

Mediation Analyses

Correlation analyses (see Table 2) found significant associations (ps ≤ .004) in all cases apart from those between family expectations and frequency of late assessments, sense of belonging, satisfaction with university, receiving feedback that made them feel like a failure, and expecting to complete university.

Table 2

The Four Dimensions of Inequality's Indirect Effects on Class and Success Association

Outcome variable	Mediator variable	β (*SE*)	99.5% Cis
Grades	Social connections	.03 (.004)	.014 .039
	Economic resources	.08 (.009)	.058, .109
	CE Time for socialising	*-.01 (.005)*	*-.030, -.002*
	CE Expectations about university	.01 (.003)	.005, .024
Frequency of class attendance	*Social connections*	*.02 (.004)*	*.009, .032*
	Economic resources	*.04 (.010)*	*.017, .073*
	CE Family expectations	-.05 (.008)	-.071, -.025
	Interdependent motivations	-.01 (.004)	-.024, -.004
Peer engagement	Social connections	.11 (.014)	.073, .156
	Interdependent motivations	*-.02 (.003)*	*-.026, -.009*
Frequency of late assessments	Social connections	-.02 (.004)	-.029, -.008
	Economic resources	-.06 (.010)	-.086, -.032
Sense of belonging	Social connections	.07 (.009)	.046, .097
	Economic resources	.02 (.007)	.002, .047
	CE Time for socialising	.02 (.004)	.004, .029
	CE Time for study	.01 (.004)	.002, .023
	CE Expectations about university	.01 (.003)	.004, .020
	Interdependent motivations	*-.02 (.004)*	*-.036, -.012*
Mental health	Social connections	.02 (.004)	.010, .032
	Economic resources	.09 (.009)	.061, .113
	CE Family expectations	*-.08 (.008)*	*-.103, -.054*
	CE Family support for study	.03 (.009)	.007, .055
	CE Time for study	.01 (.004)	.004, .028
	CE Expectations about university	.01 (.003)	.003, .017
Satisfaction with university	Social connections	.04 (.006)	.025, .058
	Economic resources	.05 (.009)	.028, .080
	CE Time for study	.02 (.005)	.010, .036
	CE Expectations about university	.02 (.004)	.006, .026
	Interdependent motivations	*-.02 (.004)*	*-.033, -.011*
University imposterism	Social connections	-.01 (.004)	-.022, -.003
	Economic resources	-.03 (.009)	-.053, -.001
	CE Family expectations	*.05 (.008)*	*.025, .072*
	CE Time for socialising	-.02 (.005)	-.031, -.002
	CE Expectations about university	-.02 (.004)	-.032, -.007
University admission as success	*Social connections*	*.02 (.004)*	*.006, .026*
	CE Family expectations	-.04 (.008)	-.062, -.016
	CE Expectations about university	-.01 (.002)	-.015, -.002
	Interdependent motivations	-.04 (.006)	-.056, -.023
Feedback associated with failure	Social connections	-.01 (.004)	-.022, -.003
	Economic resources	-.07 (.010)	-.100, -.046
	CE Time for study	-.01 (.004)	-.029, -.003
	CE Expectations about university	-.01 (.003)	-.024, -.005
Expecting to complete university	Social connections	.02 (.004)	.010, .033
	Economic resources	.06 (.009)	.032, .085
	CE Family support for university decision	.02 (.006)	.006, .043
	CE Time for study	.03 (.005)	.017 .046
	CE Expectations about university	.01 (.003)	.004, .021
	Interdependent motivations	*-.02 (.004)*	*-.033, -.012*
Expected time to complete university	Social connections	-.03 (.004)	-.040, -.014
	Economic resources	-.04 (.009)	-.065, -.012
	CE Time for study	-.02 (.004)	-.030, -.006
	CE Expectations about university	-.01 (.003)	-.017, -.002

Note. CE = cultural expectations. Models have *df*1 = 1, *df*2 =2,663. Indirect effects are computed in parallel using 5,000 bootstrapping iterations. B = the completely standardised indirect effect. *SE* = the completely standardised bootstrapped standard error for the indirect

effect. 99.5% CIs = lower and upper 99.5% bias-corrected, bootstrapped, completely standardised confidence intervals indicating significant indirect effects at $p \leq .005$. Only significant indirect effects are reported. Consistent with Yzerbyt et al. (2018), all total effects are significant, and the mediator variable was significantly associated with the predictor and outcome variables in all cases. Italicised text indicates suppression effects, in which the association became significantly *stronger*, rather than weaker, after controlling for the mediator variable.

Discussion

This study aimed to provide a better understanding of class differences in students' perceived success at six Australian universities. We proposed and confirmed three hypotheses:

(1) *Social class will be positively related to perceived success*. Using a continuous measure of class, we found that students navigating socioeconomic and class inequity (categorised as LSESCB) tended to report less success than students not impacted by these inequities (categorised as HSESCB) on several factors, including grades, special provisions, peer engagement, late assessments, sense of belonging, mental health, satisfaction with university, university imposterism, associating feedback with failure, expecting to complete university, and expected time to complete university. This is consistent with theory explaining the hegemonic marginalisation of class-based subjectivities outside of middle-class norms, including both cultural capital arguments, and recognition of greater lifeload commitments for students identified as LSESCB (Allen, 2020; Bourdieu, 1986; Burke, 2012; Naylor & Mifsud, 2020; Rubin et al., 2022). Students categorised as LSESCB reported greater class attendance and a greater association of university admission with success (O'Shea & Delahunty, 2018).

(2) *Class will be positively related to the four dimensions of inequality (social connection, economic resources, cultural expectations, and aspirations)*. Class showed significant associations with all aspects of social connections, economic resources, cultural expectations, and aspirations apart from paid work, witnessing discrimination at university, and independent motivations. The significant associations between class and the dimensions of inequality were all positive apart from that between class and interdependent motivations, which was negative ($r = -.15$, $p < .001$). This key finding is discussed in the Suppression Effects section below.

(3) *The dimensions of inequality will mediate the relationship between class and perceived success*. Social connections and economic resources mediated the associations between class and success variables in most cases, each explaining some variance in 10 out of 13 associations, although economic resources tended to have slightly higher effects. That is, students from LSESCB may experience less success at university on some measures, in part, because of fewer friendships with other university students (social connections) and fewer economic resources (Rubin et al., 2016; Rubin & Wright, 2017). However, the present study demonstrates that the mediating effects of social connections and economic resources extend to a larger array of success-related outcomes than previously thought. Suppression analyses also identified the greater time for socialising experienced by students from HSESCB reduced their relative grade advantage, perhaps because having more friends distracted them from their studies, highlighting the tension between developing social networks and time on task studying.

Cultural expectations also played a mediating role (explaining variance in 9 out of 13 associations), albeit with smaller effect; family expectations that the student would attend university were identified as having the stronger effect, while knowing what to expect about university was the most widespread of the cultural expectations variables.

Students from LSESCB reported *greater* class attendance and a *greater* association of university admission with success, and their greater interdependent motivations to be a role model for their community and to help their families after university explained their relative *advantages* over higher class students in these two areas. However, time for studying operated as a mediator in six associations that related to feelings of belonging and success (e.g., sense of belonging, mental health, satisfaction with university), expectations about completing university and the time to do so, and associating feedback with failure. Prior research shows that the time constraints of students from LSESCB mediate their lower level of social integration at university (Rubin & Wright, 2017). The present findings show that class differences in time also mediates other success-related variables. Overall, these findings suggest a stronger impact of lifeload, economic capital and social capital than cultural capital in this cohort (Bourdieu, 1986; Naylor & Mifsud, 2020). These findings together suggest the importance of financial support for students in need; proactive, intentional opportunities for peer engagement; and better career advice and demystifying university study in schools with high levels of socioeconomic disadvantage (Burke et al., 2016). Of course, these factors may be inter-related: students who do not have adequate financial support may take on more part-time work hours to finance their studies and living cost, leaving less time for peer engagement.

Suppression Effects

Several indirect effects in Table 2 represented *suppression* (italicised in Table 2) rather than mediation effects. That is, the indirect effect had the opposite sign to that of the total effect, indicating the direct effect between class and the success variable was significantly *larger* than the total effect. One such effect was seen in the desire to be a role model and to help their families and communities after university, which was more common for students from LSESCB (see also O'Shea, 2016). Class was positively associated with peer engagement, sense of belonging, satisfaction with university, and expecting to complete university, and these associations became significantly *stronger* after controlling for class differences in interdependent motivations. This indicates that strong community motivations partially compensated for the class gap on these four aspects of success. This highlights the protective, motivational effects of community capitals and identity, particularly for those navigating socioeconomic and class inequities (Hernandez et al., 2020; Yosso, 2005).

The poorer mental health and higher imposterism of students from LSESCB were suppressed by their families' lower expectations that they should attend university. Hence, controlling for these lower expectations resulted in larger class differences in mental health and imposterism. These results may make sense if we compare the anxiety and imposterism a student might feel when struggling with high family expectations or pressure alongside achieving social integration and success in their studies, compared to a student without those additional family pressures (i.e., "Am I letting my family down by feeling like I don't belong at university?" versus "No-one expected me to come to university. It makes sense I feel like I don't belong here."). Related sentiments are explored qualitatively in O'Shea (2016) and O'Shea and Delahunty (2018).

In summary, the results partly confirm our preregistered hypothesis that the four dimensions of inequality (social connections, economic resources, cultural expectations, and aspirations) would mediate the relationship between class and success. Students categorised as LSESCB had greater interdependent motivations to be a role model for their community and to assist their families after university. This helped to close the class gap in peer engagement, sense of belonging, satisfaction with university, and expecting to complete university, and account for their better class attendance and greater tendency to view their university admission as success. Hence, these findings suggest the greater interdependent motivation of students categorised as LSESCB is an important socio-psychological resource that could be better harnessed to support these students to achieve success at university.

Strengths and Limitations

A key methodological strength of this study was a relatively large sample size overall (N = 2,665) from six highly varied institutions. The sample included smaller percentages of part-time students (12.8% compared to 28.3% in the general student population; DESE, 2022) and international students (9.9% compared to 30.7%). The percentage of Aboriginal and Torres Strait Islander students was comparable with that in the general student population (2.33% vs. 1.9%). Although the percentage of female students was substantially greater in our sample than in the general student population (72.7% vs. 55.5%), the key pattern of results remained relatively stable when gender was included as a covariate, indicating that gender did not substantially influence the results. Our research was preregistered, used a stringent significance threshold (α = .005), and conservative approaches to mediation analyses (Yzerbyt et al., 2018).

A potential limitation of the study was that all measures of success were based on self-report measures, and students were reflecting on their experiences of the previous semester. Although self-report measures may lack validity, self-reported grade point average has a large positive association with actual, objective grade point average (Lounsbury et al., 2005), potentially mitigating this limitation. While a relatively short time gap between behaviour and reporting might not provide high levels of concern, the risks of delayed recall in self-reported surveys, especially during a time of such change for those responding during the first part of the COVID-19 pandemic, may be enhanced.

Perhaps more important was that many of the associations identified were significant but small. The average absolute significant association between class and success was r = .10, and the average completely standardised indirect effect size was .03. (When considering indirect effects, a small effect = .01, a medium effect = .09, and a large effect = .25; Kenny, 2018). These weak associations might raise concerns about the practical significance of our findings. However, "weak" associations are normal in the field of psychology, where the average effect size is only around r = .18 (see our preregistration document). Second, even small effects may be important when compounded and extrapolated to large populations, including university students in total (Rubin et al., 2016, p. 734).

Finally, the causal directions of our reported associations are tentative. From a theoretical perspective, it is more likely that class differences caused differences in success rather than vice versa. Nonetheless, the causal direction between class and the four dimensions of inequality and between these dimensions and success variables is certainly in question, and, to our

knowledge, no high quality studies definitively demonstrate this. Future research should consider ways of addressing this issue more carefully.

Conclusion and Implications

The project adopted a multi-dimensional framework for understanding inequality (Burke et al., 2023) that supported a multifaceted approach to the investigation of class differences in perceived success at university. Although students categorised as HSESCB tended to report greater success on most dimensions, students categorised as LSESCB are more likely to associate their university admission with success and to attend class more often. Furthermore, although social connections, economic resources, and cultural expectations tended to explain the success of students from higher class backgrounds, interdependent motivation (aspirations) tended to (a) explain the success of students with fewer class resources in terms of university admission and class attendance and (b) close the class gap in terms of peer engagement, sense of belonging, satisfaction with university, and expecting to complete university. Although this is supported by theory, especially the effect of Bourdieu's capital, our multi-dimensional approach allows these to be teased apart with greater nuance than previously.

These findings challenge deficit discourses that situate students categorised as LSESCB as being at risk, and instead encourage a strengths-based approach that values markers of success beyond conventional measures. A powerful finding of this study is that students categorised as LSESCB are more likely to gauge their success in HE by their impact on families and communities. Further research is required to confirm the generality of the present results and conclusions, but the findings suggest that an assimilationist approach to student equity strategies may be detrimental to students navigating socioeconomic and class inequities. In other words, HE institutions that attempt to transition students categorised as LSESCB into a normalised "HSESCB mindset", or a limited understanding of success at university, may be removing a key source of identity and motivation that is responsible for that success (Hernandez et al., 2020; O'Shea, 2016). We may need to do more to remind students that belonging in their communities outside of university is just as important as developing a sense of belonging to the university, and help normalise maintaining community motivations and celebrating the increasing positive impact students can achieve through their education for their communities, rather than through personal or economic development. This has important implications for university teachers and educational leaders, emphasising the importance of adopting a multicultural perspective in which universities become more flexible and inclusive to acknowledge the experiences and values of students from different class backgrounds.

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Appendix

Table A1

Demographic and Other Variables

Variable	*N*	Percentage
Gender		
Women	1,938	72.72%
Men	699	26.23%
Nonbinary	25	0.94%
Other	3	0.11%
Ethnic minority		
Yes	311	11.67%
No	2,354	88.33%
Aboriginal and/or Torres Strait Islander people		
Yes	62	2.33%
No	2,603	97.67%
University		
A	1,005	37.71%
B	544	20.41%
C	369	13.85%
D	341	12.80%
E	223	8.37%
F	183	6.87%
Year of study		
First year	199	7.47%
Second year	959	35.98%
Third year	903	33.88%
Fourth year	435	16.32%
Fifth year or greater	169	6.34%
International students		
Yes	263	9.87%
No	2,402	90.13%
Enrolment status		
Full-time	2,325	87.24%
Part-time	340	12.76%
Study mode		
On campus	2,590	97.19%
Online/distance	75	2.81%
First in family to attend university		
Yes	836	31.37%
No	1,829	68.63%
Straight from finishing high school		
Yes	1,380	51.78%
No	1,285	48.22%
If not straight from high school:		
Deferred university studies due to life circumstances	782	60.86%
Deliberately deferred	503	39.14%
Enabling pathway? Yes	452	16.96%
Enabling pathway? No	833	31.26%

Table A2

Example Items, Response Scales, and Internal Reliability Values for the Mediator and Outcome Variables

Type of measure	Measure	No. of items	Example item/Actual item	Response scale	Internal reliability
Social connections	Friendship	4	"I have friends at university that I could rely on in a time of need."	SD-SA	α = .93
Economic resources	Financial difficulty	3	"During the past 6 months, how frequently have you ... cut the size of your meals or skipped meals because there was not enough money for food?" (R)	Never (1), Always (7)	α = .89
	Finances for studying	1	"I have enough money to do my university studies."	SD-SA	–
	Finances for socialising	1	"I have enough money to participate in all the social activities I want to at university."	SD-SA	
	Homelessness	1	"How often have you considered yourself to be homeless during your time as a university student?"	Always (1), Never (7)	–
	Financial assistance	1	"During your studies, have you received financial assistance from the government?"	*Yes* (1), *No* (2)	–
	Financial stress	1	"What is your current level of financial stress in regard to paying for all your living and study costs combined?" (R)	No financial stress (0), Extreme financial stress (100)	–
	Time spent in paid work	1	"On average, how many hours a week do you do paid work?"	[Hours estimate]	–
Cultural expectations	Expectations about university	2	"I knew what to expect coming into university."	SD-SA	ρ = .63
	Perceived discrimination at university	2	"I have seen instances of discrimination at this university against people who do not have a lot of money."	SD-SA	ρ = .77
	Family expectations about attending university	1	"My family always expected me to go to university."	SD-SA	–
	Family support for the decision to attend university	1	"My family was supportive of my decision to go to university."	SD-SA	–
	Family support for university studies	1	"I can ask my family for support with my university studies."	SD-SA	–
	Time available for studying	1	"I have enough time to do my university studies."	SD-SA	–
	Time available for socialising	1	"I have enough time to participate in all the social activities I want to at university."	SD-SA	–
Aspirations	Independent motivations	2	"I am at university to expand my understanding of the world."	SD-SA	ρ = .78
	Interdependent motivations	2	"I am at university to be a role model for people in my community."	SD-SA	ρ = .55
Grades	Number of each type of grade students received last semester	1	Please write a number inside each box to indicate how many of the following course grades you received last semester: Fail	[Number provided]	–
	Average grade at university	1	If you converted your grades across all courses you have taken at university into a score out of 100, what do you think it would be?	0, 100	–
	Self-ranking relative to peers	1	Where would you place yourself relative to your peers?	0, 100	–
	Characterization of grades during university	1	Please indicate how you would characterise your grades over the course of your time at university. (R)	Excellent (1), Poor (7)	–
	Most frequent grade	1	On average, during your time as a university student, which is the grade you get most frequently?	E.g., Fail, Higher distinction	–
Special provisions	Frequency of special provision applications	1	Across your time as a university student, how often have you applied for special provisions (e.g., adverse circumstances, academic considerations, special considerations) that was not part of an approved support plan for assessment tasks, exams or other coursework? (R)	Always (1), Never (7)	–

	Acceptability of special provisions	1	In general, I think it is OK to ask for special provisions (such as extensions based on adverse circumstances) when needed. (R)	Strongly agree (1), Strongly disagree (7)	–
Belonging and identity	Sense of belonging	2	"I feel a sense of belonging to the university community."	SD-SA	ρ = .77
	Student identity	2	"Being a student is an important reflection of who I am."	SD-SA	ρ = .71
Engagement and participation	Cognitive engagement	4	"I enjoy the intellectual challenge of the courses I am studying."	SD-SA	α = .84
	Peer engagement	4	"I regularly study with other students."	SD-SA	α = .90
	Schoolwork engagement	3	"I am enthusiastic about my studies."	SD-SA	α = .89
	Percentage of time attending classes	1	"Between 0% to 100% of the time, how often do you attend lectures, tutorials, and labs or listen to their online recordings?"	0, 100	–
	Leaves of absence	1	"How many leaves of absence (breaks from your studies) have you taken since starting university?"		
	Late assessments	1	"Over the course of your time as a university student, how often would you say that you handed in assessments late?" (R)	Always (1), Never (7)	–
Feelings of success	Academic self-efficacy	2	"I can do almost all my university course work if I don't give up."	SD-SA	ρ = .71
	University imposterism	2	"In some situations at university, I feel like an imposter."	SD-SA	ρ = .71
	Mental health	5	"How much of the time, during the last month, have you…felt calm and peaceful?"	Never (1), Always (7)	α = .85
	Feelings of success	1	"I feel highly successful at university."	SD-SA	–
	Personal growth	1	"I believe I have grown as a person since starting my studies at university."	SD-SA	–
	Seeing the self as a role model	1	"As a university student, I see myself as a role model to other students, family members or friends."	SD-SA	–
	Satisfaction with university	1	"I am satisfied with my university experience so far."	SD-SA	–
Interpretations of success	University admission as success	1	"Getting into university has been one of my biggest successes to date."	SD-SA	–
	Grades as success	1	"My university grades are closely tied to how successful I feel."	SD-SA	–
	The association between feedback and failure	1	"The feedback that I got last semester made me feel like a failure."	SD-SA	–
Expectations of success	Expectations of completing university	4	"I am confident that I will be able to complete my university degree."	SD-SA	α = .82
	Expected time to complete university	1	"It is going to take me longer to finish my degree than I initially expected."	SD-SA	–
Attributions of success	Deservedness of success	1	"I deserve the success I have had at university."	SD-SA	–
	Internal attributions for success	1	"When you've had grades that you were proud of at university, would you say that it is due to the work that you put in (e.g., studying, engaging in class, organising your time well) or to circumstances beyond your control (e.g., the coursework being easy, extensions on assessments, lenient marking, luck)."	All circumstances beyond my control (0), All my own work (100)	–